DETAILED ACTION

Response to Amendment

1. The amendment filed September 20, 2010 has been entered. Claims 4-11, 14, 15, 17, 18, 20-25, 28-33, 35, and 36 are pending, of which claims 20 and 25 are independent.

Claim Objections

2. Claims 17, 18, and 28 are objected to because of the following informalities:

Claims 17 and 18 depend from cancelled claim 13. For purposes of examination, they have been treated as depending from claim 25.

Claim 28 recites "the sensors" while independent claim 25 has been amended to include "a single sensor." For purposes of examination claim 28 has been treated as reciting "the sensor."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6, 20, 29, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (JP 07-107574) in view of Gaultier (6,034,672), Yoshikawa (US Patent 5,815,139), and Yaniger (US Patent 5,828,363).

Regarding **claim 20**, Miyazaki discloses a control element for electronic appliances comprising a disc-shaped control element (7) having a circular upper surface and an opposing circular underside and unsupported in a region of a center axis (see drawing 8, between sensors 43);

an application casing (1, drawing 6);

a sensor (43) connected to the underside (i.e. indirectly connected) and measuring a direction of the tilt (inclination direction, see abstract) and an actuation force (i.e. lightly pressed down, see abstract) exerted on the upper surface of the control element, said sensor arranged at an edge of the underside (see drawing 7); and

wherein the disc-shaped control element (7) is tiltable (i.e. inclined, see abstract) about the center axis (center of drawing 8) by being manually manipulated any point along a circumference of the circular surface, causing the sensor to provide a cursor movement (see [0058] and figures 4, 5, and 19)

and a display (9) displaying a cursor moving in response to the measurement signal (e.g. figure 19).

Miyazaki does not teach the circular upper surface and the underside being substantially flat, since the upper surface shown in drawing 8 provides a ridge along the periphery. Miyazaki also does not teach a plurality of springs positioned between the application casing and the underside of the disc-shaped control element and arranged coaxially around and radially spaced from the center axis of the disc-shaped control element. Gaultier teaches a control element having an upper surface and an opposing underside, with the upper surface and the underside being substantially flat and parallel

to one another and unsupported in a region of a center axis (see figure 3). Gaultier also teaches a plurality of springs (11) positioned between the application casing (8) and the underside of the control element at the periphery of the control element. Although the control element of Gaultier is rectangular and not disc-shaped, it is obvious that the disc-shaped control element of Miyazaki can be modified to include flat surfaces as taught by Gaultier and springs at the periphery for support without modifying the circular shape of the element, in order to enable different levels of accuracy with the effort measurement system taught by Gaultier (see column 3, lines 28-32 and lines 52-59). As combined, with springs at the periphery as taught by Gaultier of the disc-shaped control element of Miyazaki, the springs are therefore arranged coaxially around and radially spaced from the center axis of the control element, since they are at the periphery.

Miyazaki and Gaultier do not teach a single sensor mounted on the underside and supplying a measurement signal measuring a direction of the tilt and an actuation force exerted on the upper surface of the control element (Miyazaki uses 4 sensors which are not mounted on the underside, and the single sensor of Gautlier measures an actuation force but not a direction of the tilt); wherein a stronger increasing pressure during actuation along an edge of the control element leads to a faster cursor movement and a weaker pressure along the edge of the control element leads to a slower cursor movement.

Yaniger teaches a control element (26, Figs 2 and 6) with a single sensor mounted on the underside (adhesive layer 44 attaches sensor 50 to the underside 28) and supplying a measurement signal measuring a direction of the tilt (i.e. the position of

the force is the same as the direction of the tilt since the control element is tilted in the direction of the force) and an actuation force (i.e. magnitude of the force) exerted on the control element (see column 4, lines 33-59, column 2, lines 9-16). Although Yaniger is a joystick device, it would have been obvious to one having ordinary skill in the art that the control element of Miyazaki as modified by Gaultier may be improved similarly to the joystick device of Yaniger by providing a single sensor on the underside of the control element that measures both the magnitude and the direction of the tilt, in order to control both the speed and the direction of the cursor movement (see column 1, lines 20-23).

In addition, Yoshikawa teaches a display displaying a cursor moving in response to the measurement signal, wherein a stronger increasing pressure during the actuation along the edge of the control element leads to a faster cursor movement and a weaker pressure along the edge of the control element leads to a slower cursor movement (see column 10, lines 4-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the speed of the cursor with the amount of force exerted on the control element as taught by Yoshikawa in the method of Miyazaki as modified by Gaultier and Yaniger, in order to provide more control of the speed of the cursor movement to the user.

As to **claim 6**, Gaultier teaches the control element exhibits a smooth surface (figure 3).

As to **claim 29**, Miyazaki teaches a display (9) that is either connected to the application casing or integrated into the application casing (see [0039]).

As to **claim 31**, Miyazaki teaches a direction of tilt is measured by the sensor with a precision of at least twelve segments of a circle (e.g. drawings 2 and 5)

As to **claim 32**, Gaultier teaches the sensor measures the activation force with a precision of at least two different levels in addition to a rest state level (see column 3, line 61-column 4, line 5).

As to **claim 33**, Yaniger teaches the location of the touch and the activation force are measured in simultaneously and transmitted for indication on the display (see column 2, lines 9-16).

5. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Zadesky (US Patent 7,046,230).

As to **claim 25**, Miyazaki discloses a method for controlling electronic appliances, comprising the steps of providing a disc-shaped control element (7) having a circular upper surface and an opposing circular underside and unsupported in a region of a center axis (see drawing 8) said disc-shaped control element having a sensor connected to the (see drawing 9) and being tiltable about a central axis (inclined, see abstract), said disc-shaped control element supported in an application casing (1) by a plurality of supports (see drawing 8 and 9) positioned between the application casing and the underside of the disc-shaped control element and arranged coaxially around and radially spaced from a center axis of the disc-shaped control element (see drawing 9),

sliding a finger over the disc-shaped control element in a circular motion to provide pressure onto an edge of the disc-shaped control element (see drawings 4, 5, and 19), pressing down the on at least one of the plurality of supports, providing a tilt of the disc-shaped control element (i.e. incline, see abstract), and actuating the sensor located below the disc-shaped control element, thereby registering the tilt (see abstract),

connecting the sensor to a micro processor (71) controlling a cursor movement (i.e. function mark or instruction mark, see [0043] and [0046] and drawings 9 and 13), continuing the sliding of the finger over the disc-shaped control element for continued cursor movement (see [0058], drawings 4, 5, and 19).

Miyazaki does not teach a single sensor mounted on the underside; the circular upper surface and the underside being substantially flat and parallel to one another; said disc-shaped control element supported in an application casing by a plurality of springs positioned between the application casing and the underside of the disc-shaped control element; pressing down on at least one of the plurality of springs and measuring an activation force with a precision of at least two different levels in addition to a rest state level.

Gaultier teaches a control element having a single sensor (12) mounted on the underside (see Fig 3); the control element having an upper surface and an opposing underside, with the upper surface and the underside being substantially flat and parallel to one another and unsupported in a region of a center axis (see figure 3). Gaultier also teaches the control element supported in an application casing by a plurality of springs

(11) positioned between the application casing (8) and the underside of the control element at the periphery of the control element; pressing down on at least one of the plurality of springs (f), and actuating the sensor (12) located below the control element, and measuring an activation force with a precision of at least two different levels (> or < threshold F) in addition to a rest state level (no finger present) (see column 3, lines 62-column 4, line 5). Although the control element of Gaultier is rectangular and not disc-shaped, it is obvious that the disc-shaped control element of Miyazaki can be modified to include flat surfaces as taught by Gaultier and springs at the periphery for support without modifying the circular shape of the element, in order to enable different levels of accuracy with the effort measurement system taught by Gaultier (see column 3, lines 28-32 and lines 52-59). As combined, with springs at the periphery as taught by Gaultier of the disc-shaped control element of Miyazaki, the springs are therefore arranged coaxially around and radially spaced from the center axis of the control element, similar to the arrangement of Miyazaki's supports, (see drawing 9) since they are at the periphery.

Miyazaki and Gaultier do not teach wherein a stronger increasing pressure during the circular motion along an edge of the control element leads to a faster cursor movement about a single axis and a weaker pressure during the circular motion along the edge of the control element leads to a slower cursor movement along the single axis.

Yoshikawa teaches wherein a stronger increasing pressure during the actuation along the edge of the control element leads to a faster cursor movement and a weaker

pressure along the edge of the control element leads to a slower cursor movement (see column 10, lines 4-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to change the speed of the cursor with the amount of force exerted on the control element as taught by Yoshikawa in the method of circular motion as taught by Miyazaki as modified by Gaultier, in order to be able to easily move the cursor faster.

However Miyazaki as modified by Gaultier and Yoshikawa still does not teach the cursor movement is along a single axis during the circular motion. Zadesky teaches sliding a finger in a circular motion to move a cursor along a single axis (see Fig 3A and column 6, lines 60-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the cursor movement along a single axis as taught by Zadesky while performing the circular motion over the control element of Miyazaki as modified by Gaultier and further modified to move the cursor at faster speeds with increased pressure as taught by Yoshikawa in the single axis, in order to rapidly traverse a long list of items.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Zadesky, as applied to claim 25 above, and further in view of Yaniger.

As to **claim 28**, Miyazaki teaches registering the tilt comprises evaluating the sensor to determine a position of actuation of the control element (see [0043]) but Miyazaki uses four sensors and the single sensor of Gaultier measures force but not a

position of actuation. However, Yaniger teaches a single sensor (50) which registers a tilt by evaluating the sensor to determine a position of actuation of the control element (see column 2, lines 9-16). Although Yaniger is a joystick device, it would have been obvious to one having ordinary skill in the art that the control element of Miyazaki as modified by Gaultier, Yoshikawa, and Zadesky may be improved similarly to the joystick device of Yaniger by providing a single sensor on the underside of the control element that measures both the magnitude and the direction of the tilt, in order to control both the speed and the direction of the cursor movement (see column 1, lines 20-23).

7. Claims 4, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Yaniger, as applied to claim 20 above, and further in view of Kishi (US Patent 5,903,229).

As to **claim 4**, Miyazaki in view of Gaultier, Yoshikawa, and Yaniger teaches the control element of claim 20 but does not teach the control element equipped with a rotatable actuation disc. Kishi teaches the control element (main body) equipped with a rotatable actuation disc (21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the rotatable actuation disc of Kishi with the control element of Miyazaki as modified by Gaultier, Yoshikawa, and Yaniger, in order to provide more comfort to the user sliding along the element.

As to **claim 5**, Kishi teaches the actuation disc is rotatable around an axis of the control element and is pivoted and supported over transmission elements (attachments) on the surface of the control element (see column 1, line 58-column 2, line 16).

As to **claim 7**, Kishi teaches the actuation disc exhibits a structured surface (see figure 24).

As to **claim 8**, Kishi teaches the actuation disc exhibits a geometric form tuned to the control element (see figure 24).

8. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, Yanger, and Kishi, as applied to claims 4 and 5 above, and further in view of Sin (US Patent 5,939,684).

As to **claim 21**, Kishi teaches the rotatable actuation disc of claim 5 but does not teach the rotatable actuation disc has about its perimeter a downwardly projecting border area disposed between but without contacting the disc-shaped control element and the application casing. Sin teaches an actuation disc 12 shaped like a cap having a rounded edge terminating in a border area projecting downwardly from the actuation disc (see figure 13), wherein the border area is disposed outside the disc shaped control element 14 without contacting the disc shaped control element and the application casing 22. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the actuation disc of Kishi with a downwardly projecting border area as taught by Sin in the control element of Miyazaki

as modified by Gaultier, Yoshikawa, Yaniger, and Kishi in order to integrate a jog shuttle and contact switch.

As to **claim 9**, Sin teaches an actuation disc 12 shaped like a cap having a rounded edge terminating in a border area projecting downwardly from the actuation disc (see figure 13), wherein the border area is disposed outside the disc shaped control element 14 without contacting the disc shaped control element and the application casing 22.

9. Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Yaniger, as applied to claim 20 above, and further in view of Nuovo, US Design D490,405 S.

Regarding **claim 10**, Miyazaki in view of Gaultier, Yoshikawa, and Yaniger discloses the control element according to claim 20, but does not specially teach wherein the control element exhibits tick marks consisting of twelve marks in regular intervals.

However, Nuovo teaches in Fig. 1 a control element exhibits tick marks consisting of twelve marks in regular intervals. It would have been obvious to one of ordinary skill in the art at the time of invention was made to have added twelve tick marks in regular intervals as taught by Nuovo to the control element of Miyazaki as modified by Gaultier, Yoshikawa, and Yaniger, for the purpose of providing tactile feedback for the user.

Regarding **claim 22**, Nuovo teaches the control element includes tick marks.

10. Claim 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, Yaniger, Kishi, and Sin, as applied to claim 21 above, and further in view of Nuovo.

Regarding **claim 23**, Miyazaki, Gaultier, Yoshikawa, Yaniger, Kishi, and Sin teach the control element according to claim 21, but do not specially teach the rotatable actuation disc includes tick marks. However, Nuovo teaches in Fig. 1 a disc exhibits tick marks. It would have been obvious to one of ordinary skill in the art at the time of invention was made to have added tick marks of Nuovo to the rotatable actuation disc of Miyazaki as modified by Gaultier, Yoshikawa, Yaniger, Kishi, and Sin, for the purpose of providing tactile feedback for the user, since the rotatable actuation disc is on top of the control element and is in contact with the finger.

As to **claim 24**, Kishi teaches the rotatable actuation disc includes rounded edges (i.e. the disc is round).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view Gaultier, Yoshikawa, Yaniger, and Kishi, as applied to claim 4 above, and further in view of Lee (US Patent 6,804,027).

Regarding **claim 11**, Miyazaki, Gaultier, Yoshikawa, Yaniger, and Kishi disclose the control element according to claim 4, but do not specifically teach wherein the appliance casing exhibits tick marks next to the edge of the control element consisting

of twelve marks in regular intervals where the actuation disc is arranged on the control element.

However, Lee teaches an appliance casing exhibits tick marks next to the edge of the control element consisting of eight marks in regular intervals where the actuation disc is arranged on the control element (Fig. 7, a control knob 701 with tick marks arrange on the housing around the outside of the control knob). It would have been obvious to have twelve tick marks in regular intervals depending on the user's or manufacture's preference. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have combined the housing with tick marks as taught by Lee with the control element of Miyazaki as modified by Gaultier, Yoshikawa, Yaniger, and Kishi for the purpose of accurate adjustments (col. 4 lines 33-40).

12. Claims 14, 15, 17, 35, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Zadesky, as applied to claim 25 above, and further in view of Tamagawa (US Patent 6,603,708).

As to **claim 15**, Miyazaki in view of Gaultier, Yoshikawa, and Zadesky teaches the method of claim 25 but does not teach a display of a character repertoire upon actuation of the edge of the control element, the position of the actuation on the surface of the control element leading to a highlighting of a character at the corresponding position on a display and the most recently highlighted character is input when the control element is released.

Tamagawa teaches a display of a character repertoire (numbers 2-11, see figure 18A) upon actuation of the edge of the control element (10), the position of the actuation on the surface of the control element leading to a highlighting of a character (e.g. 6) at the corresponding position on a display (94) and the most recently highlighted character is input when the control element is released (e.g. 7, see figure 18 B and column 20, lines 15-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the character repertoire of Tamagawa in the method of Miyazaki as modified by Gaultier, Yoshikawa, and Zadesky, in order to input text to an electronic device with less button presses.

As to **claim 14**, Tamagawa (figure 13A and B) teaches selecting a menu (91) by actuating the edge of the control element (10), the position of the actuation of the control element leading to a highlighting of the menu item at the corresponding position on a display (86) (also see figures 15A and B).

Claims 35 and 36 are analyzed similar to claims 14 and 15 respectively.

As to **claim 17**, Tamagawa teaches a highlighting of a character can be selected by changing positions during the actuated state of the control element (see column 20, lines 15-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the character repertoire of Tamagawa in the method of Miyazaki as modified by Gaultier, Yoshikawa, and Zadesky, in order to input text to an electronic device with less button presses.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Zadesky, as applied to claim 25 above, and further in view of Goren (US Patent 7,190,351).

Regarding **claim 18**, Miyazaki in view of Gaultier, Yoshikawa, and Zadesky discloses the method according to claim 25, but does not specially teach wherein the character repertoire consists of the letters "A" to "M" at the upper edge of the screen and the letters "N" to "Z" at the lower edge of the screen.

However, Gorgen teaches a character repertoire consists of the letters "A" to "M" at the upper edge of the screen and the letters "N" to "Z" at the lower edge of the screen (Fig. 19 and 20 shows an illustration of the character selection interface with control buttons 200-204 and secondary buttons 300-305 displayed on the screen 110. The control buttons 200-204 may be placed on the left hand side while the secondary buttons 300-305 may be placed on the right hand side for the convenience of a handheld with a jog wheel, col. 17 lines 6-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have manipulated the character selection interface as taught by Gorgen to arrange the letters "A" to "M" at the upper edge of the screen and the letters "N" to "Z" at the lower edge of the screen to be in conjunction with the control element of Miyazaki as modified by Gaultier, Yoshikawa, and Zadesky for the purpose of rapid selection and with ease (col. 17 lines 6-17).

14. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Gaultier, Yoshikawa, and Yaniger, as applied to claim 20 above, and further in view of Endo (US Publication 2002/0054012).

As to **claim 30**, Miyazaki in view of Gaultier teaches the control element of claim 20 but does not teach a peripheral edge of the disc-shaped control element travels approx. 0.5 to 2 millimeters away from a rest position when tilted about the center axis by manual manipulation. Endo teaches a control element wherein a peripheral edge of the disc-shaped control element travels approx. 0.6mm away from a rest position when tilted about the center axis by manual manipulation (see [0118]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the peripheral edge traveling approx. 0.5-2mm away from a rest position when tilted as taught by Endo, in the control element of Miyazaki as modified by Gaultier, in order to use a Hall element sensor.

Response to Arguments

15. Applicant's arguments with respect to claims 20 and 25 have been considered but are moot in view of the new ground(s) of rejection. In view of amendments, the newly found prior art references of Zadesky and Yaniger have been added for new grounds of rejection.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALLISON WALTHALL whose telephone number is (571)270-3571. The examiner can normally be reached on Mon-Fri 9:30-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571)272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

anw
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